

**Petroleum, petrochemical and natural
gas industries - Shell-and-tube heat
exchangers**

Petroleum, petrochemical and natural gas industries
- Shell-and-tube heat exchangers

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 16812:2007 sisaldab Euroopa standardi EN ISO 16812:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 30.03.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 16812:2007 consists of the English text of the European standard EN ISO 16812:2007.</p> <p>This document is endorsed on 30.03.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This International Standard specifies requirements and gives recommendations for the mechanical design, material selection, fabrication, inspection, testing and preparation for shipment of shell-and-tube heat exchangers for the petroleum, petrochemical and natural gas industries. This International Standard is applicable to the following types of shell-and-tube heat exchangers: heaters, condensers, coolers and reboilers. This International Standard is not applicable to vacuum-operated steam surface condensers and feed-water heaters.</p>	<p>Scope: This International Standard specifies requirements and gives recommendations for the mechanical design, material selection, fabrication, inspection, testing and preparation for shipment of shell-and-tube heat exchangers for the petroleum, petrochemical and natural gas industries. This International Standard is applicable to the following types of shell-and-tube heat exchangers: heaters, condensers, coolers and reboilers. This International Standard is not applicable to vacuum-operated steam surface condensers and feed-water heaters.</p>
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Échangeurs de chaleur à faisceaux (ISO 16812:2007)

Erdöl-, petrochemische und Erdgasindustrie -
Rohrbündelwärmetauscher (ISO 16812:2007)

This European Standard was approved by CEN on 3 February 2007.

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Foreword

This document (EN ISO 16812:2007) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2007, and conflicting national standards shall be withdrawn at the latest by August 2007.

This document supersedes EN ISO 16812:2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 16812:2007 has been approved by CEN as EN ISO 16812:2007 without any modifications.

**Petroleum, petrochemical and natural gas
industries — Shell-and-tube heat
exchangers**

*Industries du pétrole, de la pétrochimie et du gaz naturel — Échangeurs
de chaleur à faisceaux*



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16812 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 6, *Processing equipment and systems*.

This second edition cancels and replaces the first edition (ISO 16812:2002), which has been technically revised.

Introduction

Users of this International Standard should be aware that further or differing requirements may be needed for individual applications. This International Standard is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this International Standard and provide details.

Annex A provides some optional recommended practices.

A bullet (●) at the beginning of a clause or subclause indicates a requirement for the purchaser to make a decision or provide information (see checklist in Annex B).

In this International Standard, where practical, US Customary (USC) units are included in parentheses for information.

Petroleum, petrochemical and natural gas industries — Shell-and-tube heat exchangers

1 Scope

This International Standard specifies requirements and gives recommendations for the mechanical design, material selection, fabrication, inspection, testing and preparation for shipment of shell-and-tube heat exchangers for the petroleum, petrochemical and natural gas industries.

This International Standard is applicable to the following types of shell-and-tube heat exchangers: heaters, condensers, coolers and reboilers.

This International Standard is not applicable to vacuum-operated steam surface condensers and feed-water heaters.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15156 (all parts), *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production*

ASME B 16.5¹⁾, *Pipe Flanges and Flanged Fittings*

ASME B 16.11, *Forged Fittings, Socket-Welding and Threaded*

ASME B 1.20.1, *Pipe Threads, General Purpose (Inch)*

EJMA²⁾, *Standards of the Expansion Joint Manufacturers Association*

NACE MR0103³⁾, *Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments*

TEMA Standards Set⁴⁾, 8th Edition, *Standards of the Tubular Exchanger Manufacturers Association*

1) ASME International, 3 Park Avenue, New York, NY 10016-5990, USA.

2) Expansion Joint Manufacturers Association, 25 North Broadway, Tarrytown, NY 10591, USA.

3) NACE International, P.O. Box 218340, Houston, TX 77218-8340, USA.

4) Tubular Exchanger Manufacturers Association, 25 North Broadway, Tarrytown, NY 10591, USA.